

WHAT IS CLAIMED IS:

1. A method for forming a metal-coated powder, comprising:

mixing a precursor of at least one metal and the powder to be coated with a glycolic or diol solvent to form a reaction mixture;

and refluxing said reaction mixture so that the glycolic or diol solvent reduces said precursor to the metal over time to produce powder coated with said metal.

2. The method according to claim 1 wherein the precursor of a metal is selected from the group consisting of metal salts, hydrates of metal salts, acids including said metal as part of an oxyanion, salts of said acids, and mixtures thereof.

3. The method according to claim 1 wherein the precursor of the method is selected from the group consisting of oxides, borides, carbides, nitrides, and silicides.

4. The method according to claim 1 wherein the powders have a particle size from about 1 nanometer to about 100 microns.

5. The method according to claim 1 wherein said metal precursor is selected from the group consisting of metal acetates, metal acetylacetones, metal oxides, metal chlorides, metal nitrates, metal acetate hydrates, metal chloride hydrates, and metal nitride hydrates.

6. The method according to claim 1 wherein said metal is selected from the group consisting of tungsten, molybdenum, rhenium, and tantalum.

7. The method according to claim 1 wherein said reaction mixture is reacted at a temperature at which said metal precursor is soluble in said glycolic or diol solvent.

8. The method according to claim 1 wherein said glycolic or diol solvent is selected from

the group consisting of ethylene glycol, propylene glycol, tetraethylene glycol, and mixtures thereof.

9. The method according to claim 1 wherein the metal precursor is present in said reaction mixture at a concentration of about 0.001 to about 0.10 M.

10. The method according to claim 1 wherein said glycolic or diol solvent is selected from the group consisting of aliphatic glycols, polyalkylene glycols derived from alkylene glycols, glycerol, and mixtures thereof.

11. The method according to claim 1 wherein the glycolic or diol solvent has a boiling temperature between about 185°C and about 328°C.

12. The method according to claim 1 wherein the powders are coated with vanadium, chromium, magnesium, iron, cobalt, nickel, copper, niobium, molybdenum, ruthenium, rhenium, palladium, silver, indium, tin, tantalum, tungsten, osmium, platinum, gold or alloys thereof.